Wyoming Science Academic Content Standards
GRADE SPAN K – 4

<table>
<tr><th colspan="3">CONTENT STANDARD 1. <u>CONCEPTS AND PROCESSES</u>
In the context of unifying concepts and processes, students develop an understanding of scientific content through inquiry. Science is a dynamic process; concepts and content are best learned through inquiry and investigation.
ACADEMIC CONTENT STANDARD 1. <u>CONCEPTS AND PROCESSES</u>
Students learn about scientific content through inquiry.</th></tr>
<tr><th>Grade 4
Benchmark</th><th>Grade 4
Academic Benchmark</th><th>Levels of Complexity</th></tr>
<tr><td rowspan="3"><u>Life Systems</u>

1. <u>Characteristics of Organisms</u>: Students describe observable characteristics of living things, including structures that serve specific functions and everyday behaviors.</td><td rowspan="3"><u>Life Systems</u>

4.A.S.1.1 Students demonstrate which features of living organisms serve specific functions.</td><td>Level IV
Students consistently and independently perform in unfamiliar settings using natural supports.
Students explain how features of living organisms serve specific functions.
Ex. When presented with a set of feathers, students explain that feathers help birds fly.</td></tr>
<tr><td>Level III
Students consistently perform in several familiar settings.
Students demonstrate which features of living organisms serve specific functions.
Ex. When presented with a representation of an ear, students identify that this is a feature which allows a person to hear sound.</td></tr>
<tr><td>Level II
Students require external support and multiple prompts in limited familiar settings.
Students identify or label a feature of a human being.
Ex. When presented with a representation of an arm, students use objects with word/picture/icon labels to identify the arm.</td></tr>
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		Level I *Students require external support and multiple prompts in a structured setting.* **Students recognize features of human beings.** Ex. Students respond by using eye gaze or verbalizations to a representation of features of a human face.

Grade 4 Benchmark	Grade 4 Academic Benchmark	Levels of Complexity
<u>Life Systems</u> **2. <u>Life Cycles of Organisms</u>: Students sequence life cycles of living things, and recognize that plants and animals resemble their parents.**	**<u>Life Systems</u>** **4.A.S.1.2 Students describe how plants and animals resemble their parents.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students describe traits of plants and animals which are passed from their parents.** Ex. When presented with a representation of a red flower, students recognize petal color as passed down from a parent.
		Level III *Students consistently perform in several familiar settings.* **Students describe how plants and animals resemble their parents.** Ex. When presented with a representation of a young animal, students describe similar characteristics to its adult counterpart.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students recognize the offspring of parent animals.** Ex. Students recognize a representation of a cat as the parent of a representation of a kitten.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students respond to a presentation of animals and their offspring.** Ex. Students respond by using eye gaze or verbalizations to representations of cows and calves.

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<u>Life Systems</u> **3. <u>Organisms and Their Environments</u>: Students show connections between living things, their basic needs, and the environments.**	**<u>Life Systems</u>** **4.A.S.1.3 Students demonstrate which features of living organisms serve specific functions in survival within different habitats.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students explain how features of living organisms serve specific functions in survival within different habitats.** Ex. When presented with a set of animal tracks, students organize tracks associated with living in or near water such as webbed toes or duck prints, in order to explain how a feature serves a specific function in a given habitat.
		Level III *Students consistently perform in several familiar settings.* **Students demonstrate which features of living organisms serve specific functions in survival within different habitats.** Ex. When presented with a representation of a cat, students locate the feature which allows a cat to hear sound.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students identify or label a feature of a living organism related to survival.** Ex. When presented with a representation of a cat, students use objects with word/picture/icon labels to identify the cat's ear when asked to indicate the ear.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students recognize features of living**

		organisms related to survival within different habitats. Ex. Students respond by using eye gaze or verbalizations to feathers or fur pelts and presentation of survival terms.

Grade 4 Benchmark	Grade 4 Academic Benchmark	Levels of Complexity
Earth and Space Systems **4. Properties of Earth Materials: Students investigate water, air, rocks, and soils to compare basic properties of earth materials.** **5. Objects in the Sky: Students describe observable objects in the sky and their patterns of movement.**	**Earth and Space Systems** **4.A.S.1.4 Students describe and compare observable characteristics of water, air, rocks, and soil.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students draw conclusions regarding earth materials based on observable physical characteristics.** Ex. When presented with a set of various soil types, students conclude that a rocky soil type would not be best to use to grow a plant.
		Level III *Students consistently perform in several familiar settings.* **Students describe and compare observable characteristics of water, air, rocks, and soil.** Ex. Given a set a terms such as gas, solid, or liquid, students match the terms with the appropriate earth material.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students sort water, air, rocks, or soil by observable physical characteristics.** Ex. When presented with a variety of rock samples, students sort rocks according to physical characteristics (e.g. size, shape, or texture).
		Level I *Students require external support and multiple prompts in a structured setting.* **Students attend to characteristics of earth materials.** Ex. Students indicate a preference for smooth or rough rocks after touch or other form of observation.

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Earth and Space Systems **6. Changes in Earth and Sky: Students describe observable changes in earth and sky, including rapid and gradual changes to the earth's surface, and daily and seasonal changes in the weather.**	**Earth and Space Systems** **4.A.S.1.5 Students describe gradual changes to the Earth's surface.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students classify gradual changes to the Earth's surface.** Ex. Students classify changes to the Earth's surface as building up or breaking down.
		Level III *Students consistently perform in several familiar settings.* **Students describe gradual changes to the Earth's surface.** Ex. Students describe the erosion of soil along a stream bank either by observation over time or by a classroom model.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students recognize natural changes to the Earth's surface.** Ex. Students recognize changes in the Earth's surface due to weather as a natural change and a new road as a man made change.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students respond to presentation of weathering of earth materials.** Ex. Students touch or are assisted to push sand to indicate movement of earth materials by wind.

Grade 4 Benchmark	Grade 4 Academic Benchmark	Levels of Complexity
Physical Systems **7. Properties of Objects: Students classify objects by properties that can be observed, measured, and recorded, including color, shape, size, weight, volume, texture, and temperature.** **8. Changes in States of Matter: Students demonstrate that the processes of heating and cooling can change matter from one state to another.** **9. Physical Phenomena: Students investigate physical phenomena commonly encountered in daily life, including light, heat, electricity, sound, and magnetism.**	**Physical Systems** **4.A.S.1.6 Students demonstrate that heating or cooling can change water between a solid or liquid by measuring and recording different observable physical properties.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students predict how the process of heating and cooling will change water between a solid or liquid.** Ex. Students observe and record a given set of physical conditions in order to predict the effect of heating or cooling on the physical state of water.
		Level III *Students consistently perform in several familiar settings.* **Students demonstrate that heating or cooling can change water between a solid or liquid by measuring and recording different observable physical properties.** Ex. When presented with different samples of water in different states, students classify the samples by observable characteristics (gas, liquid, or solid) and measurable characteristics (temperature).
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students recognize that heating or cooling can change water between a solid or liquid with different observable physical properties.** Ex. When presented with different samples of water in different states, students complete a teacher-provided chart by listing observable characteristics (gas, liquid, or solid), and matching the sample to the characteristic.

		Level I *Students require external support and multiple prompts in a structured setting.* **Students indicate the physical state of water based on observation.** Ex. Students respond to a choice of a cup of water or a cup of ice cubes.

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Physical Systems **10. Position and Motion of Objects: Students demonstrate that pushing and pulling can change the position and motion of objects.**	**Physical Systems** **4.A.S.1.7 Students demonstrate that pushing or pulling can change the position of objects.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students demonstrate that pushing and pulling can change the position and motion of objects.** Ex. Students compare an object that is still to an object in motion.
		Level III *Students consistently perform in several familiar settings.* **Students demonstrate that pushing or pulling can change the position of objects.** Ex. Given a set of objects (cart, ball, block), students locate the new position relative to the original position after a force (push or pull) has been applied.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students identify that pushing and pulling can cause an object to move.** Ex. Given a set of objects (cart, ball, block), students state the object is in a new position after a force (push or pull) has been applied.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students recognize that an object's position has changed.** Ex. Students indicate through eye gaze or vocalization that an object is in a new position when presented with an object that has been moved from its original position.

CONTENT STANDARD 2: SCIENCE AS INQUIRY **Students demonstrate knowledge, skills, and habits of mind necessary to safely perform scientific inquiry. Inquiry is the foundation for the development of content, teaching students the use of processes of science that enable them to construct and develop their own knowledge. Inquiry requires appropriate field, classroom, and laboratory experiences with suitable facilities and equipment.** ACADEMIC CONTENT STANDARD 2: SCIENCE AS INQUIRY **Students use inquiry to better understand their world.**		
Grade 4 Benchmark	**Grade 4 Academic Benchmark**	**Levels of Complexity**
1. Students research answers to science questions and present findings through appropriate means.	**4.A.S.2.1 Students use science reference materials to answer science questions and present findings.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students use science reference materials to answer science questions and present findings with an explanation.** Ex. When asked about weather conditions, students find and explain how to interpret the meaning of the information in the newspaper, such as high and low temperatures.
		Level III *Students consistently perform in several familiar settings.* **Students use science reference materials to answer science questions and present findings.** Ex. When asked about weather conditions, students find the information in a newspaper.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students use science reference materials to match answers to science questions.** Ex. Presented with pictures of various animal homes, students recognize the pictures of a nest as a home

		for a bird.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students recognize a picture or object as referenced within a scientific question.** Ex. When asked a question about a cat, students indicate a picture or representation of a cat as the subject.

Grade 4 Benchmark	Grade 4 Academic Benchmark	Levels of Complexity
2. Students use the inquiry process to conduct simple scientific investigations. **D. Pose or identify questions and make predictions**	**2. Students use the inquiry process to conduct simple scientific investigations.** **4.A.S.2.2.a Students ask questions about objects, organisms or events in the environment.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students ask questions about objects, organisms or events in the environment and make their predictions.** Ex. Students ask questions about foxes after learning about fox dens and fox habitats. Students then make predictions about where they might find a fox.
		Level III *Students consistently perform in several familiar settings.* **Students ask questions about objects, organisms or events in the environment.** Ex. After observing a squirrel in a tree, students ask where squirrels live.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students identify given questions related to an object or organism or event in the environment.** Ex. Given a representation of a pond, students match questions related to water or ducks to the environment.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students indicate their preference for objects, organisms or events in the environment.**

		Ex. Students indicate if they would prefer to learn about bears, cows or fish.

Grade 4 Benchmark	Grade 4 Academic Benchmark	Levels of Complexity
2. Students use the inquiry process to conduct simple scientific investigations. **A. Collect and organize data** **E. Conduct investigations to answer questions and check predictions.** **3. Students identify and use appropriate scientific equipment.**	**2. Students use the inquiry process to conduct simple scientific investigations.** **4.A.S.2.2.b Students conduct simple investigations using simple equipment and tools to collect data.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students conduct a simple investigation and identify and use simple equipment and tools to collect data.** Ex. Students identify the tools needed to investigate a simple investigation about magnets and materials that will stick to the magnets.
		Level III *Students consistently perform in several familiar settings.* **Students conduct simple investigations using simple equipment and tools to collect data.** Ex. Students conduct an investigation into which objects float when provided with tools and objects.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students recognize the tools required to collect specific data.** Ex. Students identify a thermometer as a tool to measure the outside temperature.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students recognize the tools required to collect specific data.** Ex. Students use eye gaze or vocalization to indicate a thermometer when prompted.

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2. Students use the inquiry process to conduct simple scientific investigations. **B. Use data to construct simple graphs, charts, diagrams, and/or models.**	**2. Students use the inquiry process to conduct simple scientific investigations.** **4.A.S.2.2.c Students use data to complete a simple graph, chart, diagram, and/or model.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students use data to construct simple a graph, chart, diagram, and/or model.** Ex. Students complete a bar graph by adding title and axes to organize data such as temperature readings during a month.
		Level III *Students consistently perform in several familiar settings.* **Students use data to complete a simple graph, chart, diagram, and/or model.** Ex. Students sort data on the types of reptiles in Wyoming when provided with a labeled chart, graph or diagram (eg.. Venn diagram).
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students identify the correct placement on a chart or diagram for an aspect of data.** Ex. Students place one data point on a labeled diagram such as a representation of a fish in the fish category.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students recognize an organized representation of data.** Ex. Students respond to the organized group of blocks when presented with a set organized by size and another that is mixed.

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2. Students use the inquiry process to conduct simple scientific investigations. **C. Draw conclusions and accurately communicate results, making connections to daily life.**	**2. Students use the inquiry process to conduct simple scientific investigations.** **4.A.S.2.2.d Students communicate results of an investigation.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students explain the results of an investigation.** Ex. Students conclude that objects roll faster down a steeper ramp.
		Level III *Students consistently perform in several familiar settings.* **Students communicate results of an investigation.** Ex. Students share that magnets only stick to metal objects.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students state the results of an investigation.** Ex. Students identify which ramp produced faster rolls after watching an experiment of balls rolling down ramps of different grades.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students indicate attention to a presentation of the results of an investigation.** Ex. Students indicate attention through eye gaze, verbalizations, and/or other response to a ramp and ball experiment.

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4. Students properly use safety equipment and recognize hazards and safety symbols while practicing standard safety procedures.	**4.A.S.2.3 Students identify safety symbols and the associated concept.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students identify safety symbols, the associated concept, and identify a related safety procedure.** Ex. Students name the danger and explain the appropriate action (such as poison means you should stay away, don't ingest, wash hands after using, etc.) when shown a symbol such as a skull and crossbones.
		Level III *Students consistently perform in several familiar settings.* **Students identify safety symbols and the associated concept.** Ex. Students name the danger when shown a symbol as a skull and crossbones.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students match a safety symbol and its associated concept.** Ex. Students can match safety symbols with warnings such as fire or poison.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students recognize a safety symbol as a warning.**

CONTENT STANDARD 3. HISTORY AND NATURE OF SCIENCE IN PERSONAL AND SOCIAL DECISIONS **Students recognize the nature of science, its history, and its connections to personal, social, economic, and political decisions. Historically, scientific events have had significant impacts on our cultural heritage.** **ACADEMIC CONTENT STANDARD 3. HISTORY AND NATURE OF SCIENCE IN PERSONAL AND SOCIAL DECISIONS** **Students use scientific knowledge to make personal decisions.**		
Grade 4 Benchmark	**Grade 4 Academic Benchmark**	**Levels of Complexity**
1. Students recognize the nature and history of science. **A. Discuss how scientific ideas change over time** **B. Describe contributions of scientists**	**1. Students recognize the nature and history of science.** **4.A.S.3.1 Students demonstrate the sequence of events which link a technological advance to their environment.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students explain the contributions of the improved characteristics of a technological advancement over time.** Ex. Students explain why people need and use cars and why we don't still use a horse and carriage.
		Level III *Students consistently perform in several familiar settings.* **Students demonstrate the sequence of events which link a technological advancement to their environment.** Ex. Students order a set of graphic representations of the development of the automobile.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students describe the difference or similarity in characteristics between an old and new man-made technological device.** Ex. Students identify a similarity between a carriage and a car.

		Level I *Students require external support and multiple prompts in a structured setting.* **Students recognize a natural or a man-made object.** Ex. Students use gestures or vocalizations to indicate that a horse is not a man-made object.

Grade 4 Benchmark	Grade 4 Academic Benchmark	Levels of Complexity
2. Students recognize how scientific information is used to make decisions. **A. Identify and describe local science issues, such as environmental hazards or resource management** **B. Suggest feasible solutions and personal action plans to address an identified issue**	**2. Students recognize how scientific information is used to make decisions.** **4.A.S.3.2 Students identify and perform a task associated with a healthy life style.**	**Level IV** *Students consistently and independently perform in unfamiliar settings using natural supports.* **Students identify and plan a way to maintain a healthy life style.** Ex. Students identify a physical activity such as exercising and plan a way to engage in that activity on a regular basis.
		Level III *Students consistently perform in several familiar settings.* **Students identify and perform a task associated with a healthy life style.** Ex. Students identify hand washing as necessary before meals.
		Level II *Students require external support and multiple prompts in limited familiar settings.* **Students identify ways to keep healthy.** Ex. Students identify washing their hands or brushing their teeth as ways to keep healthy.
		Level I *Students require external support and multiple prompts in a structured setting.* **Students engage in a healthy practice.** Ex. Students respond to a healthy practice such as having their hands washed.